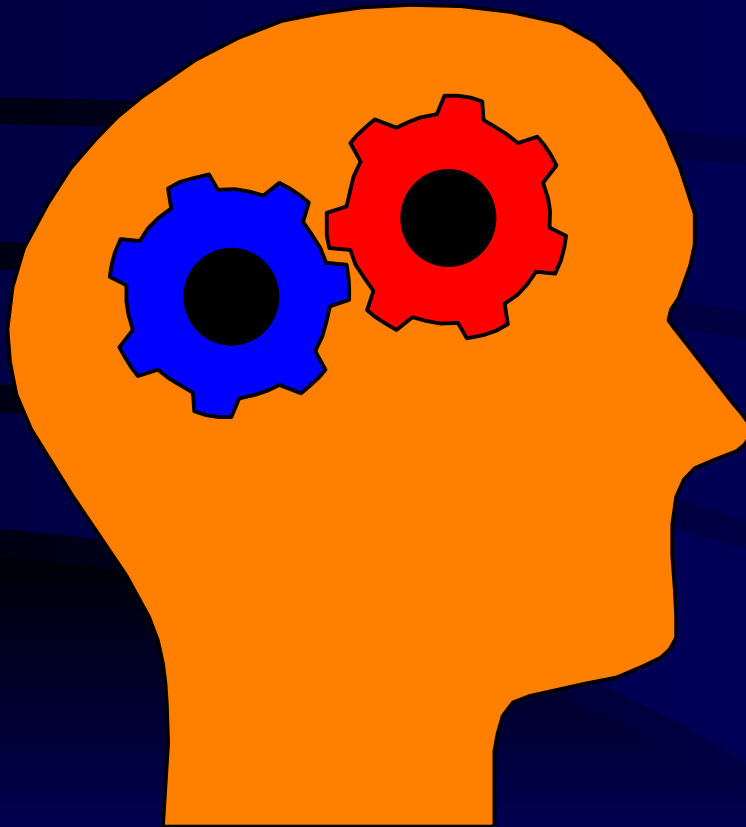


Lesson 9



Evaluating Public Health Surveillance



Objectives for Lesson 9

- Describe types of evaluation used in public health surveillance
- Differentiate among aspects of surveillance evaluation
- Outline components of a surveillance evaluation report



Types of Evaluation

Level One:

- * evaluates whether health event should be under surveillance
- * should be answered from an external perspective

Level Two:

- * evaluates whether system is meeting its objectives and operating effectively
- * goal is to achieve the simplest, least expensive system



Elements of Surveillance Evaluation

- public health importance
- objectives
- usefulness
- operation of system
- qualitative attributions
- quantitative attributes
- cost



Measures of Importance of Health Event

- magnitude of problem
- morbidity
- severity
- premature mortality
- economic cost
- preventability



System Objectives and Usefulness

- Define the health event under surveillance
- State the objectives of the system
- Impact on health event occurrence
- Usefulness



System Usefulness

Does the System:

- Detect trends signaling changes in the occurrence of the health problem in question?
- Detect epidemics?
- Provide estimates of the magnitude of morbidity and mortality?



System Usefulness (part 2)

Does the System:

- Stimulate epidemiological research likely to lead to control or prevention?
- Identify risk factors?
- Permit assessment of the effects of control measures?
- Lead to improved clinical practice?



Operation of the System

- Who is responsible for reporting a case?
- To whom are cases reported?
- What information is collected?
- Who collects information?
- How are data transferred among administrative levels?
- How is information stored?
- Who analyzes the data?

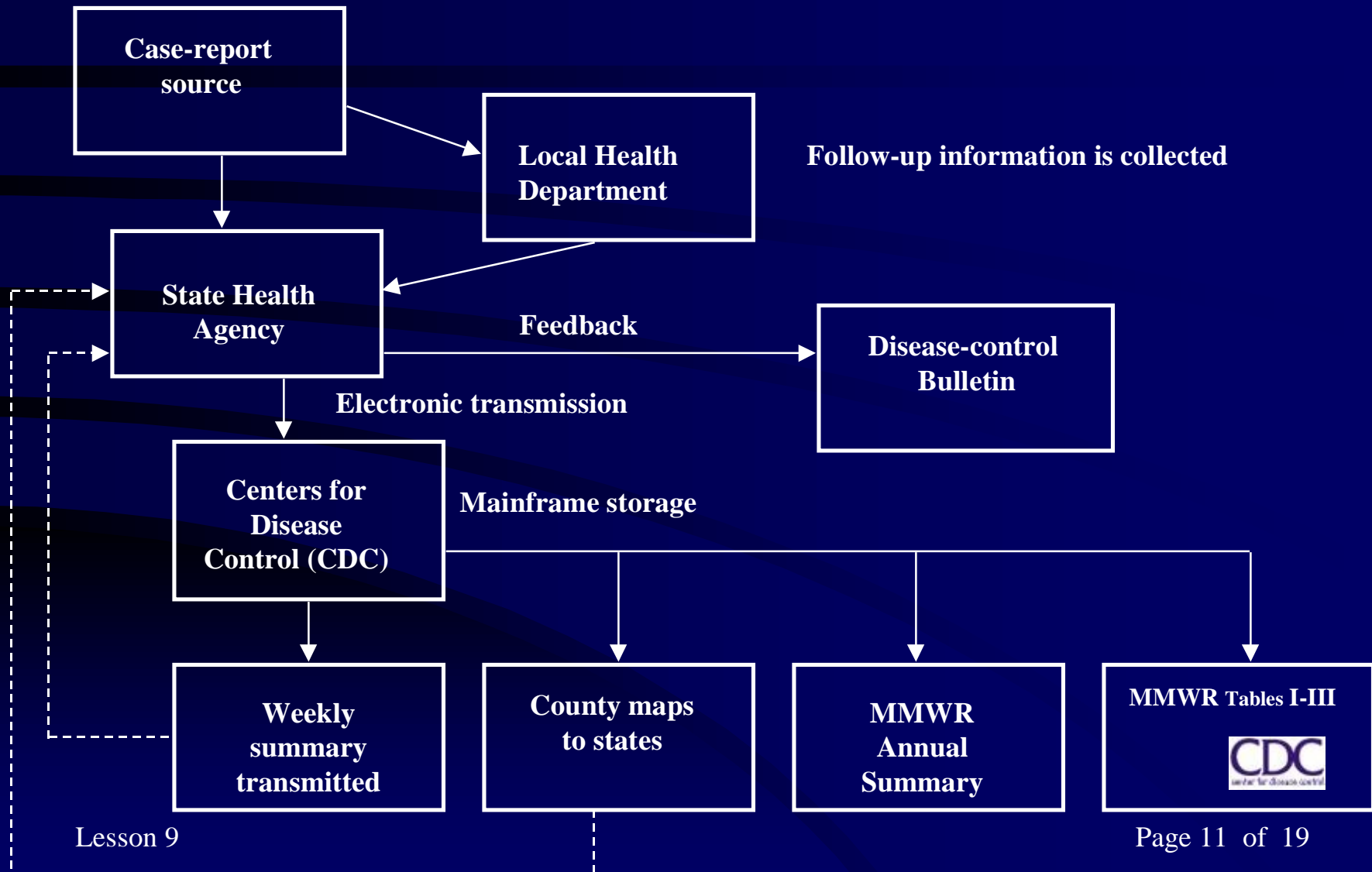


Operation of the System (continued)

- How are data analyzed
- How often are data analyzed?
- What types of reports are prepared?
- How often are reports disseminated
- To whom are reports disseminated?
- Through what mechanisms are reports distributed?
- Are there any automatic responses to case reports?



National Notifiable-Disease Surveillance System

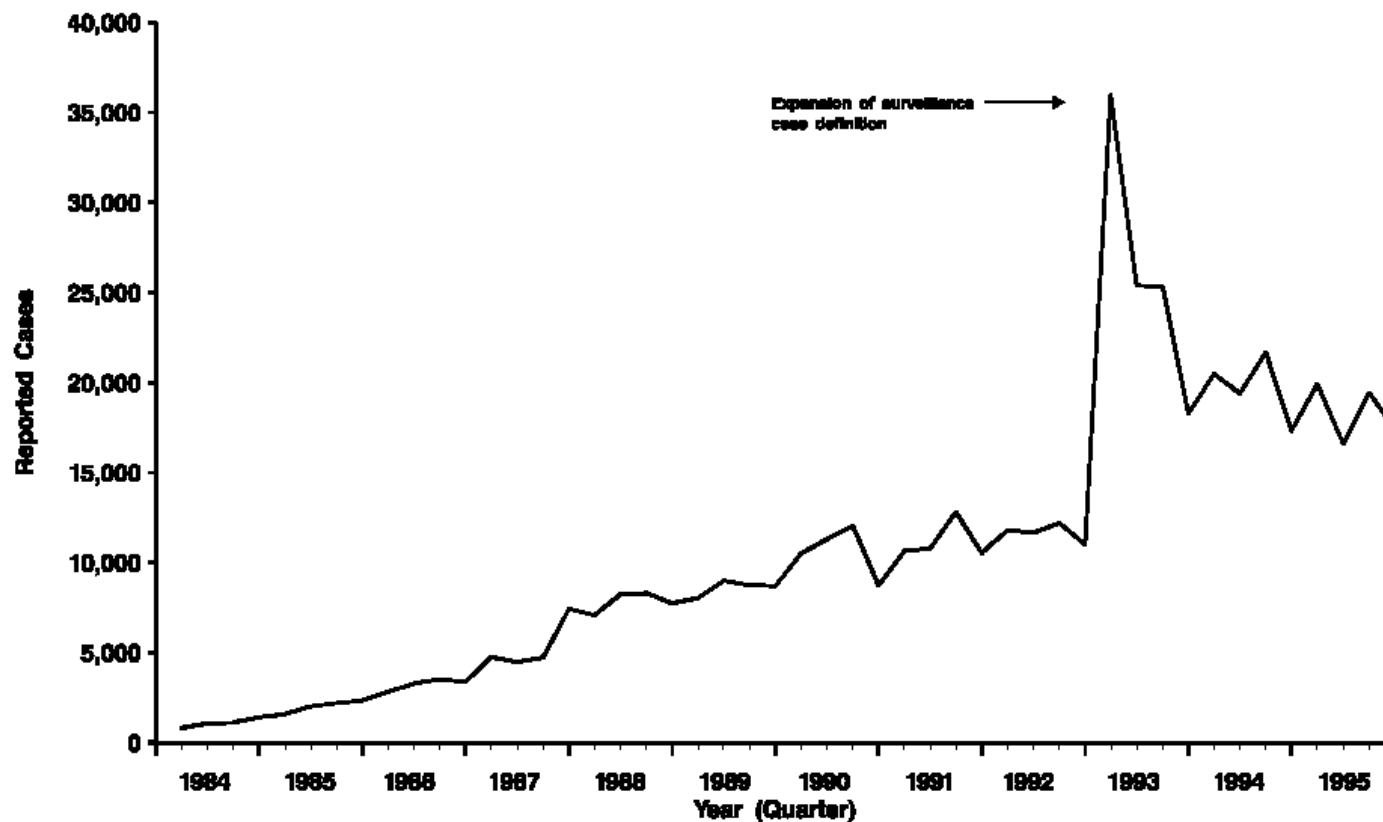


Qualitative Attributes

- simplicity
- flexibility
- acceptability



ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS) — reported cases, by quarter, United States,* 1984–1995



*Includes Guam, Puerto Rico, the U.S. Pacific Islands, and the U.S. Virgin Islands.

The number of AIDS cases reported during 1995 was lower than the number reported in 1994 or in 1993. This decrease reflects the waning effect of the expansion, in 1993, of the AIDS case definition used for surveillance.



Quantitative Attributes

- sensitivity
- predictive value
positive
- representativeness
- timeliness



The Detection of Health Conditions with a Surveillance System

		<i>Condition Present</i>		
		Yes	No	
Detected by Surveillance	Yes	True Positive A	False Positive B	A + B
	No	False Negative C	True Negative D	C + D
		A + C	B + D	Total



* Sensitivity = $A/(A+C)$

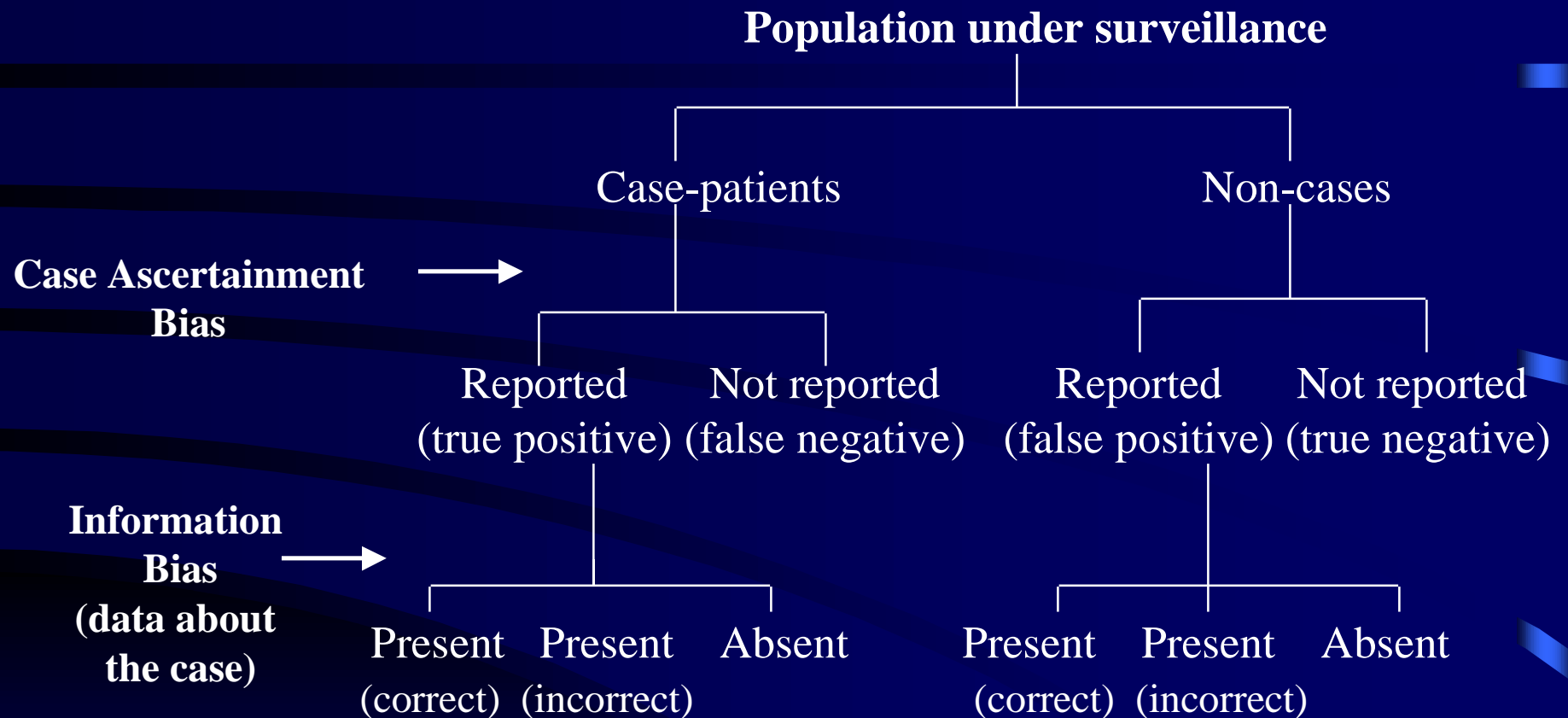
The Detection of Health Conditions with a Surveillance System

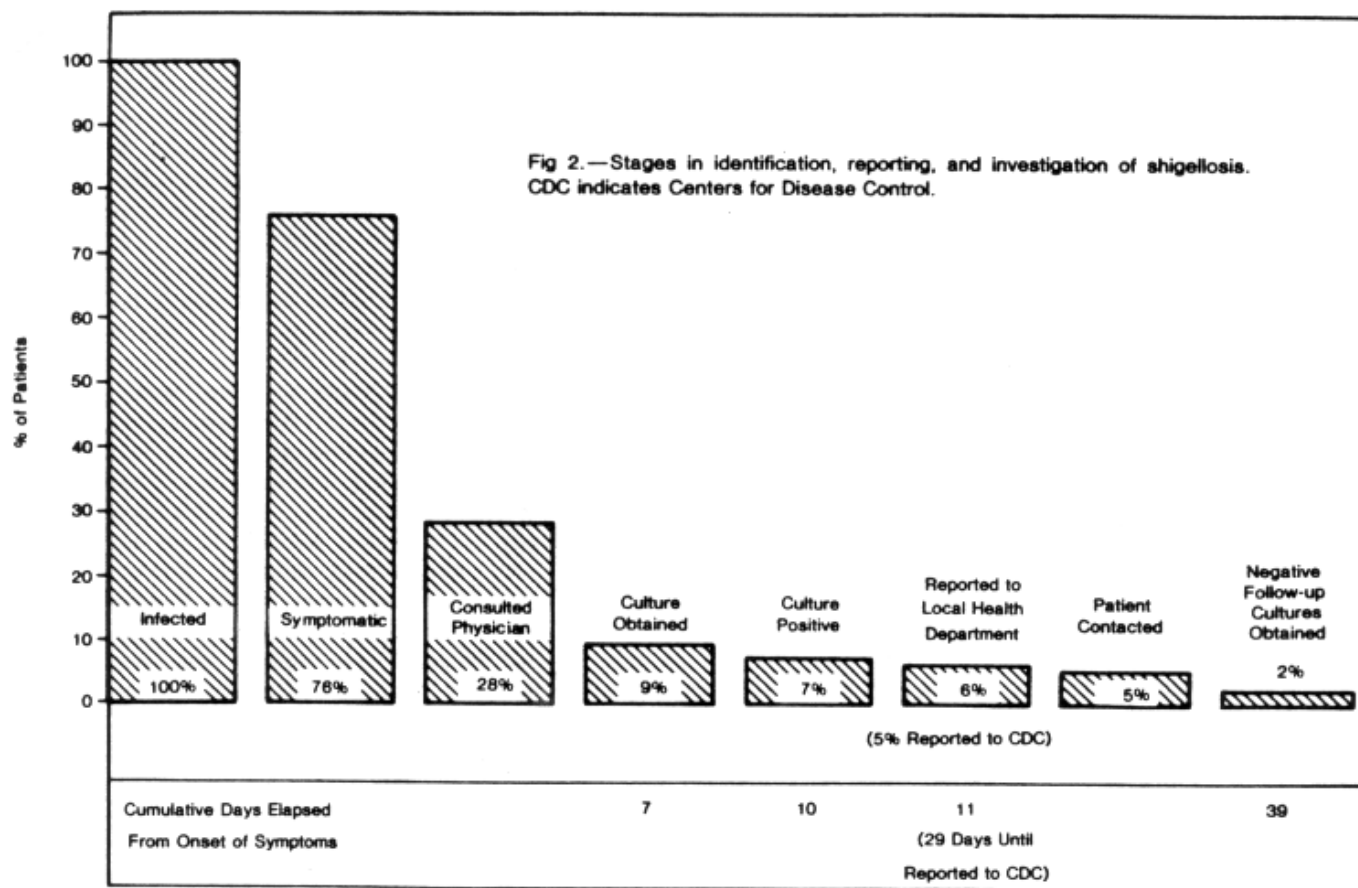
		<i>Condition Present</i>		
		Yes	No	
Detected by Surveillance	Yes	True Positive A	False Positive B	A + B
	No	False Negative C	True Negative D	C + D
		A + C	B + D	Total

* Sensitivity = $A/(A+C)$
 * Predictive Value Positive = $A/A+B$



Biases in Surveillance





Comparison of Estimated Costs for Active and Passive Surveillance Systems in a Health Department, Vermont, June 1, 1980, to May 31, 1981

	<i>Type of Surveillance System</i>	
	Active*	Passive**
Paper	\$ 114	\$ 80
Mailing	185	48
Telephone	1,947	175
Personnel		
Secretary	3,000	2,000
Public health nurse	<u>14,025</u>	<u>0</u>
TOTAL	19,271	2,303

*Active = Weekly calls from health department to request reports.

**Passive = Provider-initiated reporting

